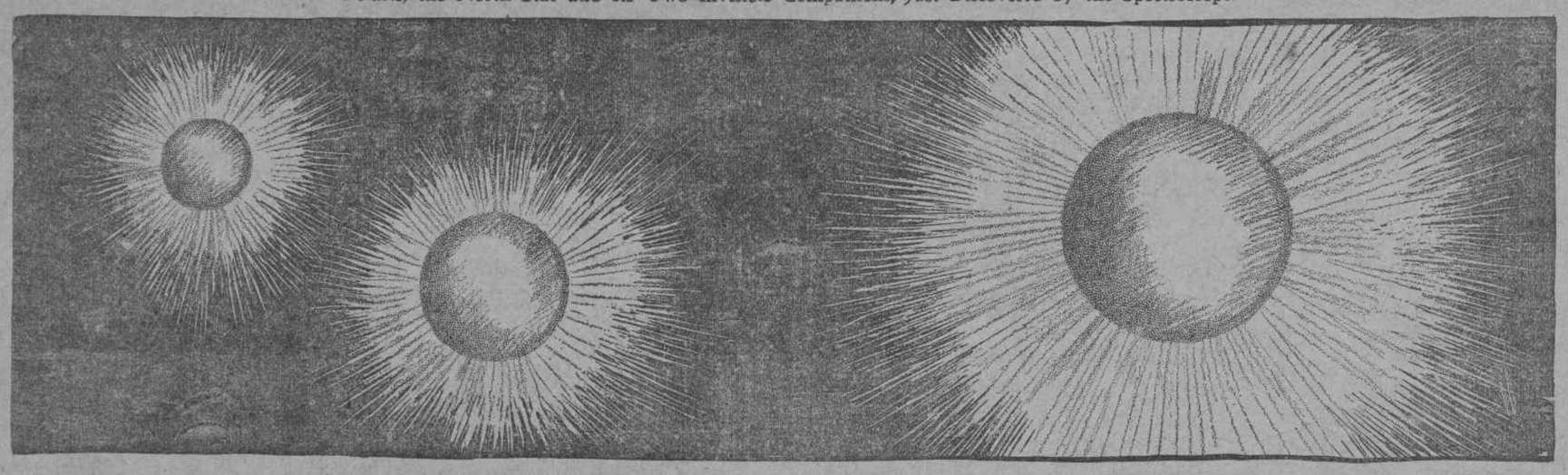
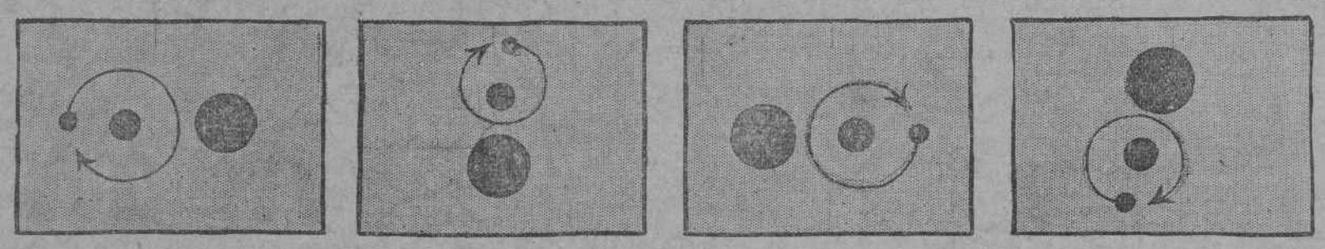
VERY CURIOUS DISCOVERY THAT THE NORTH STAR IS REALLY THREE PLANETS.

Polaris, the North Star and Its Two Invisible Companions, Just Discovered by the Spectroscope.



These Diagrams Show How the Two Companions



Revolve Around the North Star Once in Four Years.

ONE of the most interesting recent discoveries in astronomy is that the North Star is not one star, but three.

This star, which is 250,000,000,000 miles away from the earth, has been one of the most familiar objects in the firmament since the beginning of creation, and yet its true nature was not even suspected until the other day. The North Star is one of the most brilliantly beautiful in color and is the star which children are first taught to distinguish.

It points constantly to the North Pole of the earth and has been of more aid to navigators and travellers in unknown regions than any other celestial body which illuminates the night.

It was by means of the spectroscope attached to the great thirty-six-inch refracting telescope at the Lick Observatory that the existence of two companions of the North Star was discovered the other day. Only one star is visible to the eye, even with the greatest of telescopes, but the spectroscope reveals the existence of two others with mathematical accuracy.

The spectroscope is an instrument which separates light into its component colors. When the light from the North Star was examined in the spectroscope attached to the Lick telescope the other day changes in the lines of color were observed which could only be accounted for by the fact that there were other bodies present. From this point it was only a matter of mathematics to calculate their number, position and movements.

The North Star, which is called by astronomers Polaris, is really a great sun. It is accompanied by two invisible stars just discovered by the spectroscope. One of these revolves about the other and the two revolve about Polaris, just as the earth and moon do around the sun. It is calculated that it requires four years for the two invisible bodies to revolve around Polaris. Thus a year there is four times longer than ours. The bright Polaris revolves on its own axis once in four days.

Polaris is approaching the solar system at a varying rate which has reached as high as sixteen miles a second. The variation is due to the attraction of the two bodies upon the third. This was another fact which proved to the astronomers the right nature of the star.

Professor W. W. Campbell, of the Lick Observatory, thus explained the discovery that the North Star had two companions:

"The observations of Polaris were made with the Mills spectroscope attached to the thirty-six-inch telescope. From the well-known principle of the shifting of the line in the spectrum of a star we can determine whether the star is approaching or receding from the observer and how rapidly. For most stars the velocity is constant. For some stars the velocity is variable, due to the attractions of companion stars.

"The recent observations of Polaris at Lick Observatory show that its velocity is variable. It is approaching the solar system now with a velocity of eight kilometres per second. This will increase in two days to fourteen kilometres, and in the next two days will decrease again to eight kilometres. This cycle of change is repeated every four days. The bright Polaris, therefore, revolves about the centre of gravity of itself and its invisible companions once in four days. The orbit is nearly circular and is comparable in size with the moon's orbit around the earth.

"This centre of gravity, and therefore the binary system, is approaching the solar system at present with a velocity of eleven and a half kilometres per second. A few measures of the velocity of Polaris made here in 1896 gave its approach at the rate of twenty kilometres per second. Part of this change since 1896 could be due to a change in position of the orbit of the binary system, but most of it must have been produced by the attraction of a third body on the two bodies comprising the four-day system.

"Both companions of Polaris are invisible, but their presence is proved by disturbances which their attractions produce in the motion of the bright Polaris."

It is interesting to point out that not only are there many suns in the heavens, but they are of many colors. The North Star shines with a pure white light, and our sun is a dazzling yellow, but there are other suns which through the telescope appear blue, green, purple and red.

Sirius, Altair, Deneb and Vega are bluish-white; Aldebaran, Betelgeuse and Antares are exceedingly bright red; Arcturus is a duller red than the others; Rigel is blue and Capella is yellow.

The most brilliant effects in coloring are found among the double stars. These are stars which appear single to the naked eye, but on examination by the telescope are found to consist of two or more stars placed near together. When two so placed are of different colors the result is dazzling.

In the constellation of the Southern Cross there is a group which appears like a piece of magnificent and stupendous jewelry. Among many white stars there are five green ones, one greenish blue and two beautiful red ones.

A large white star in one of the northern constellations is accompanied by one of rich purple color. In another case a triple star consists of an orange red sun with two companions of a bright emerald green. One double star is formed by a large orange sun with a small blue companion.

The people who dwell on planets revolving around double suns of different color must witness daily what to us would be an extraordinary spectacle. They may have two sunsets a day, one green and the other purple. Two suns may mingle their rays, a blue sun and a red sun giving a purple light, or a blue sun and a yellow sun giving a green light.

The coloring is supposed to be due to the condition and composition of the atmosphere surrounding the stars. A red star has an atmosphere which stops all but the red rays of light.

These colors change from time to time. Sirius which is now bluish white is known to have been red many hundreds of years ago. These variations are still going on.

The photo-spectroscope has accomplished wonders in discovering the colors of stars and the existence of new ones invisible to the eye even with the telescope.

A few years ago at the Harvard Observatory the first photo-spectroscope multiple star was discovered unexpectedly. The star Mizar, the middle star of the handle of the Big Dipper, has been called a "naked-eye" double because it has a visible companion, Alcor, close to it. But Riccioli in 1650 discovered with the telescope that Mizar had a telescopic double. Mizar seems to have been the first double star discovered with a telescope. The apparent distance between Mizar and Alcor is nearly forty times the distance that separates components of Mizar. The telescope shows, too, that there are other stars between Mizar and Alcor.

Two centuries after the telescope revealed two stars in Mizar the spectroscope showed that the brighter of the components was itself made up of two stars. In photographs taken at the Harvard Observatory in 1889 the K line in the spectrum of Mizar appeared double. In other plates the line was single, in others it was hazy. A close scrutiny of all the plates showed that the line was double at intervals of fifty-two days. This proved to astronomers that the brighter component of Mizar was really two stars.

A spectroscope takes cognizance of the motion of a star to or from the earth. When one star begins to approach and the other to recede from us, the lines in the spectrum of the approaching star will be displaced toward the violet end, while those of the receding star will be displaced toward the red end. The lines will at first appear hazy, but when the approach and recession of the stars reach a maximum the lines will appear double. The calculated distance between the components of Mizar is about 143,000,000 miles, and the brilliancy of the star is estimated to be over a hundred times greater than that of our sun.

A number of other photo-spectroscopic multiple stars have been discovered recently. With the Lick telescope and spectroscope, 14 have been found. This method of discovery came about from the use of the spectra to determine the velocity with which stars approached or receded from the earth.

THE ONLY WOMAN OF WHOM THE EMPRESS EUGENIE WAS JEALOUS.

PARIS, Sept. 8.—Celeste Mogador otherwise known as the Countess de Chabrillan, was once famed as the only woman of whom the Empress Eugenie was jealous.

She was a great beauty and one of the most fascinating women of the days when the Empress dazzled all Europe with her splendor. She is now very poor and very old, so old that her voice is like one from the tomb.

The world has long forgotten her, and many believed she was dead, until recently, when she made application to the Government for a pension. The Countess's claim is a good one, but very ancient, older, in fact, than the Republic, for it is full forty years since her husband, who was a French Consul in Australia, died there.

The widows of French Consuls are entitled to pensions, but the Government hesitates, because it is suggested that a claim which has been dormant for two score years is outlawed by lapse of time.

This remarkable woman never received any education, and yet she has written her famous "Memoirs," twenty romances, ten dramas, ten comedies and one hundred poems. Even Camille Flammarion cannot explain this phenomenon. The Countess made a great deal of money by her pen, and like most artists spent it freely. As there is no home in France for superannuated geniuses the poor old lady whom Napoleon loved and of whom Eugenie was jealous is likely to have a hard time in the Winter of her life.

This seems all the more cruel, as the Countess herself once gave a fete at her Australian home, where, in one evening, she realized the sum of sixty thousand francs for the wounded soldiers of the Crimean war.

The Countess de Chabrillan at the Height of Her Beauty.

SOME REMINISCENCES OF LINCOLN BY HIS PRIVATE TELEGRAPHER.

GENERAL Superintendent Charles A. Tinker, of the Western Union Telegraph Company, has written for the Telegraph Age a remarkably interesting paper, touching upon the eventful period of the history of the United States when the civil war was raging.

At that time Superintendent Tinker, then a mere boy, was in daily communication with the President and saw him in all his unparalleled simplicity. In telling of the first time Superintendent Tinker met "Old Abe," in Pekin, Ill., before the great emancipator became President, he writes of that meeting:

"One afternoon, as I was sitting on my high stool listening to the click of the register, and waiting for a customer, he came to the office, and looking over the tall railing, said: 'Mr. Operator, I have always had a curiosity to see the telegraph work. You don't seem to be very busy, and as I have a half hour or so to wait for dinner, I wonder if you will not explain it to me?' I replied 'Certainly, sir: I should be pleased to do so,' and inviting him inside the gate, I proceeded to show him the 'working of the telegraph'—explained the battery and its connection to the instruments, and the wires leading thence out of the window and away to the world without. I was encouraged by the readiness with which he comprehended it all. He seemed to grasp its intricacies, and remarked: 'How simple it is when you know it all.' I called up Chicago, and requested the operator to send a message to 'Old Abe Lincoln,' who was standing at my side. He sent the usual complimentary greeting. Mr. Lincoln watched me closely as I copied it from ear, and thought that was the mystery of it all, as he could not take it in. He wished me to thank the Chicago operator, and to say that he was greatly pleased at this opportunity to see the operation of the telegraph. He then left me."

Some time after that young Tinker entered the United States Telegraph Service, and most of the telegrams to the President passed through his hands. Of the second nomination of Lincoln he writes:

"During the progress of the Baltimore Convention, by which Mr. Lincoln was nominated for a second term, one of his secretaries, Mr. Nicolay, who attended the convention, kept the President constantly advised of the proceedings. Finally came the message announcing his nomination. It was sent quickly to the White House by an orderly. Shortly after the message had gone Mr. Lincoln came into the office, and I congratulated him upon his nomination. He exclaimed, 'I hadn't heard of it.' With some surprise I explained that I had sent Mr. Nicolay's message over to the White House by an orderly. He said: 'Well, I guess he took the short cut. I came around by the public highway.' I then showed him a copy of the message. He read it hastily and said: 'I guess you had better send that over to the Madam. She will be as much interested in it as me.'

"It happened that when the message announcing the nomination of Andrew Johnson to the Vice-Presidency was received the President was in the office. He read it carefully and soliloquized aloud: 'Well, I thought possibly he might be the man. Perhaps he is the best man, but'—— and rising from his chair he passed out of the office, leaving me impressed with the significance of the unfinished doubt, which, in the light of subsequent events, became a thrilling prophecy."

Superintendent Tinker is also president of the Lincoln Club of Brooklyn, and his stories of the dead President are regarded as invaluable history that will add much to the information to be handed down to posterity.

MLLE. HENRIOT, LATEST FRENCH BEAUTY WHO HAS CAPTIVATED PARIS.

The New Actress of the Comedie Francaise.

PARIS, Sept. 8.—Mademoiselle Henriot is the latest Parisian beauty and also the latest star of the great Theatre Francais.

Her beauty is of a pure and somewhat cold type, suggesting that of Cleo de Merode. Her face is highly intelligent, while her figure is ample and finely proportioned.

Jules Claretie, man of letters, Academician, president of the Society of Authors and General Administrator of the Comedie Francaise, stands sponsor for Mlle. Henriot's talent. He says the day is not far distant when this young Frenchwoman will rank with the brightest names in the history of the famous classic French Theatre.

To become a star of the Comedie Francaise contains infinite possibilities of fame and wealth. It is only necessary to recall Rachel to indicate how great a reward attends success in the department of art in France. A French actress of the first rank holds a position equal to that of the great painters of the day, and superior to that of any artist in any other country.

The actor or actress here is supposed to apply one of the highest forms of art to the expression of the best literature.

The actress of the legitimate theatre, while she has a freedom of life not permitted to ordinary French women, enjoys the respect of the best society.

Not only does the successful actress receive proper recognition as an artist, but she may set the fashions for the rest of the world. The most fashionable women of Paris find their inspiration for new styles on the stage and the great dressmakers try them on there first. The French actress practically sets the fashions of the whole world. Her position is a proud one, and that is why we should note the rise of a new one with interest.

Some Interesting New Things in Miss Julia Grant's Wedding Trousseau.

THE lingerie which Miss Julia Dent Grant ordered last Summer in Paris for her trousseau has just arrived at Newport.

It is the most beautiful collection of dainty undergarments ever owned by an American girl and shows many exquisite novelties. Her petticoats, of which she has two dozen, are made in an entirely new fashion and no two are alike. They are all cut and fitted to the figure with the same care and precision as the sheath-like dress skirts. And the greater number of them are made with trains. These clinging trained underskirts are hand painted, hand embroidered and a mass of billowy tulle ruffles. So beautiful are they that it seems almost a crime to hide them from view.

One, which is fluffy with white tulle ruffles, is made of white china silk with perpendicular insertions of real Valenciennes lace. It is finished toward the bottom with a flounce made of fourteen rows of tiny white tulle ruffles. The train is entirely of the ruffles, which are mounted on white silk to give it sufficient body.

Miss Grant has a number of hand embroidered petticoats. A specially pretty one is of real Irish linen, embroidered in white daisies. Below the knees the skirt is trimmed with three narrow bands of lace insertion, which act as a heading for a deep flounce of real point d'alencons lace. The skirt is cut with a long train and has a novel touch of color in two little red bows caught at the top of the flounce. This skirt alone cost $300.

Hand-painted dresses are now no novelty among the "400," but hand-painted petticoats are something entirely new. Miss Grant has imported the first one.

It is a fairy-like creation of white mousseline de soie, scattered with hand-painted pink rosebuds and made over a foundation of white silk. The skirt also has a train and is cut in the new clinging shape.

There are two dozen corset covers in the future Princess Cantacuzene's wedding trousseau, and at least half of them she designed herself.

The one shown in the illustration is perhaps the prettiest of them all. Assuredly it is the most original. It is of filmy white batiste, crossed with horizontal bands of Italian lace insertion. Down the front the corset cover is trimmed with pale blue silk velvet bows. And the low neck is finished with a fichu of the batiste. There are little blue velvet bows on the shoulders, and the arm holes are outlined with a narrow frill of the lace. The corset cover ends just at the waist line.

Wee velvet bows also add to the beauty and daintiness of many of Miss Grant's chemises. She has two dozen altogether, trimmed with real lace.

One more novel than the others is of soft batiste, tucked so that it clings to the shape of the figure. It has a yoke formed of alternate bands of narrow mechlin lace insertion and groups of fine tucks, while at the bottom of each lace band is a tiny yellow silk velvet bow. The skirt part of the chemise is finished with wider clusters of tucks and wider bands of the mechlin lace insertion.

Miss Grant has an extremely novel negligé, which was made to order for her at a famous lingerie establishment on the Rue de la Paix, in Paris. It is a loose, flowing gown of pale blue silk, with hand-painted birds scattered over it. The birds are much darker than the silk and stand out in bold relief against their paler blue background. The negligé has [illegible] sleeves like a kimona, and a deep blue Ligerty gauze scarf draped over the shoulders, caught in two rosettes in front and then falling to the bottom of the gown in two long ends.

Another odd feature of this curious and yet beautiful negligé is a high standing shirred deep blue Liberty gauze collar at the back.

Real Russian embroidery is used to trim one of Miss Grant's French-made bath robes. The bath robe is of Irish linen, and it is covered with broad bands of a rich blue Russian embroidery. The [illegible] turn-over collar is a solid mass of the embroidery, and where it fastens in the front is a full blue silk bow.

In Miss Grant's lingerie trousseau there are one dozen dressing sacques, and each one introduces some special novelty.

Hand-painted Negligee. Corset Cover, with Silk Velvet Bows. Bath Robe Trimmed with Blue Russian Embroidery. Trained Petticoat of Batiste and Lace, Embroidered with Daisies. Chemise with Yellow Velvet Bows and Silk. Underskirt with Tulle Ruffles.